Upper 9-Mile Plan

EPA-CPG Meeting

October 4, 2017

623526

Overview

- Remedy Optimization - Spatially varying RALs
  - EPA Analysis
  - CPG Analysis
- Risk Reduction
  - Tissue Recovery Estimation
- Adaptive Management
  - Trigger Conditions and Responses
  - Monitoring
    - Baseline
    - Remedy Performance
- Model Improvements
- Schedule for ROD 1 and ROD 2
- Legal Issues
- Action Items and Next Steps
  - Phase 1 RAOS

The Proposed Adaptive Remedy is Scientifically Supported and Certain to be Protective

Certain:

- Immediately reduces contaminant levels by an order of magnitude
- Human Health & Ecological risks significantly & quickly reduced
- Recovery will be accelerated

Expected:

- Meeting risk based cleanup goals between 20 and 50 years.

Certain:

- Post remediation monitoring will provide data needed to confirm recovery
- If additional remediation is needed more will be done

Can the EPA Team recommend the Upper 9-Mile Plan to Your Management?

Extending Proposed Phase 1 RALs to RM8-14.7

RM Range	RM 8-17.4 Post-remedy SWAC 2,3,7,8-TCDD (ng/kg)	Acreage
8 - 12.5	83	65
8 - 14.7	62	81

Results for:
Conditional Simulation 37
2,3,7,8-TCDD RAL = 300 ng/kg
Total PCB RAL = 1 mg/kg
Conc in remediated areas (incl. RM10.9) = 0
Applies centerpoint delineation approach

2,3,7,8-TCDD RAL Combinations for RM 8-17.4

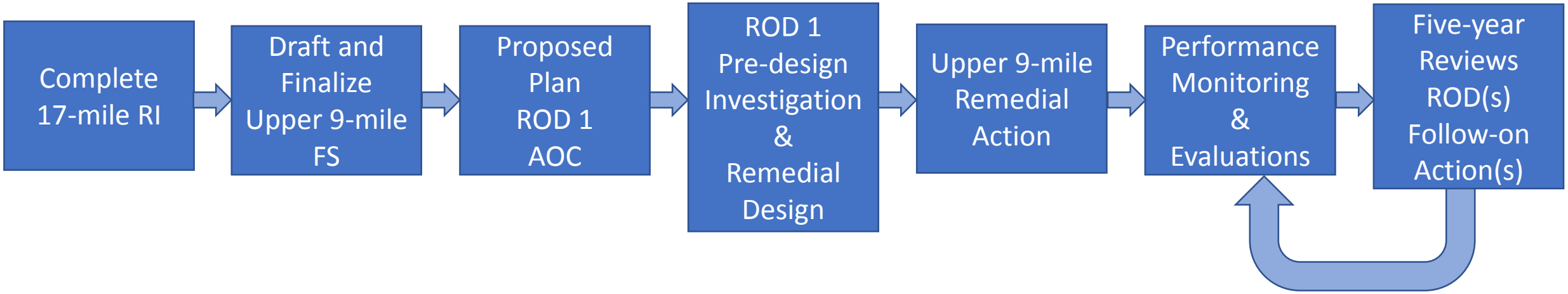
RAL in fish forage areas	RAL in areas with erosion >0.5 ft	RAL in direct contact areas	RAL elsewhere	RM 8-14.7 Acreage for CS37 (range of CS's)	RM 8-17.4 Post-remedy SWAC for CS 37	
					2,3,7,8-TCDD (ng/kg)	Total PCB (mg/kg)
300	300	300	300	81 (66-90)	62	0.29
250	250	250	300	82 (68-92)	56	0.28
250	250	250	350	81 (66-91)	58	0.29
250	250	250	500	80 (65-89)	61	0.29

For all cases, total PCB RAL = 1 mg/kg.

Estimating Human Health and Ecological Risk Reduction

- Key assumptions:
  - Percent reduction based on RAL of 300 ng/kg for dioxins and 1 mg/kg for total PCBs.
  - Equal percent reduction in tissue and sediment.
- Risk reduction at remedy completion is ~90%
- EPA & CPG should continue discussions demonstrating how Phase 1 of the Upper 9-Mile Plan reduces risk for the entire River

Upper 9-mile Plan – An Adaptive & Iterative Approach



2017	2018	2019	2020-2022	2023-2026	2027- ~2033

Upper 9-mile Adaptive Management Process

Remedial Design
- Perform baseline monitoring
- Investigate uncertainties
- Develop recovery projections using refined CFT model
- Set triggers

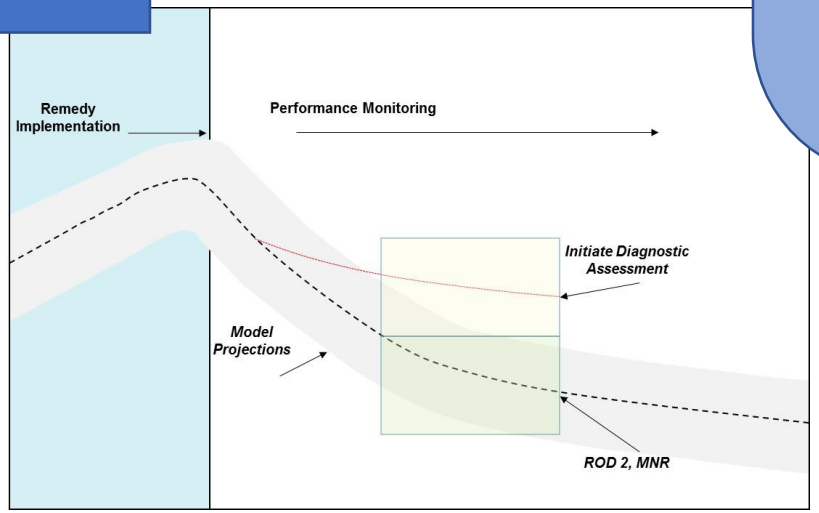
Remedy Implementation

Long-term Performance Monitoring

Recovery progressing within expected range?

Yes
- MNR final remedy
- Final cleanup goals
- Final ROD

No
- Diagnostic assessment
- Additional monitoring to reduce uncertainty
- Evaluate/ implement additional actions
- Second interim ROD



Adaptive Management Approach

- Adaptive management framework will be developed in the Upper 9-Mile FS; detailed plan will be finalized during Remedial Design
- Criteria and triggers for diagnostic assessment and/or additional action will be based on comparison of performance monitoring data with projected recovery rates
- Diagnostic measures could include:
  - Increased monitoring frequency to confirm conditions of concern
  - Focused sampling to isolate area(s) of concern
  - Bathymetric evaluation
  - Model recalibration
  - CSM refinement
  - Source identification
- If the diagnostic assessment identifies:
  - Lack of recovery due to identifiable factors – additional remedial actions will be evaluated/selected
  - Slower than projected but ongoing recovery – revisit CSM and/or model projections, re-evaluate risk reduction timeframes, continue monitoring and/or consider additional actions

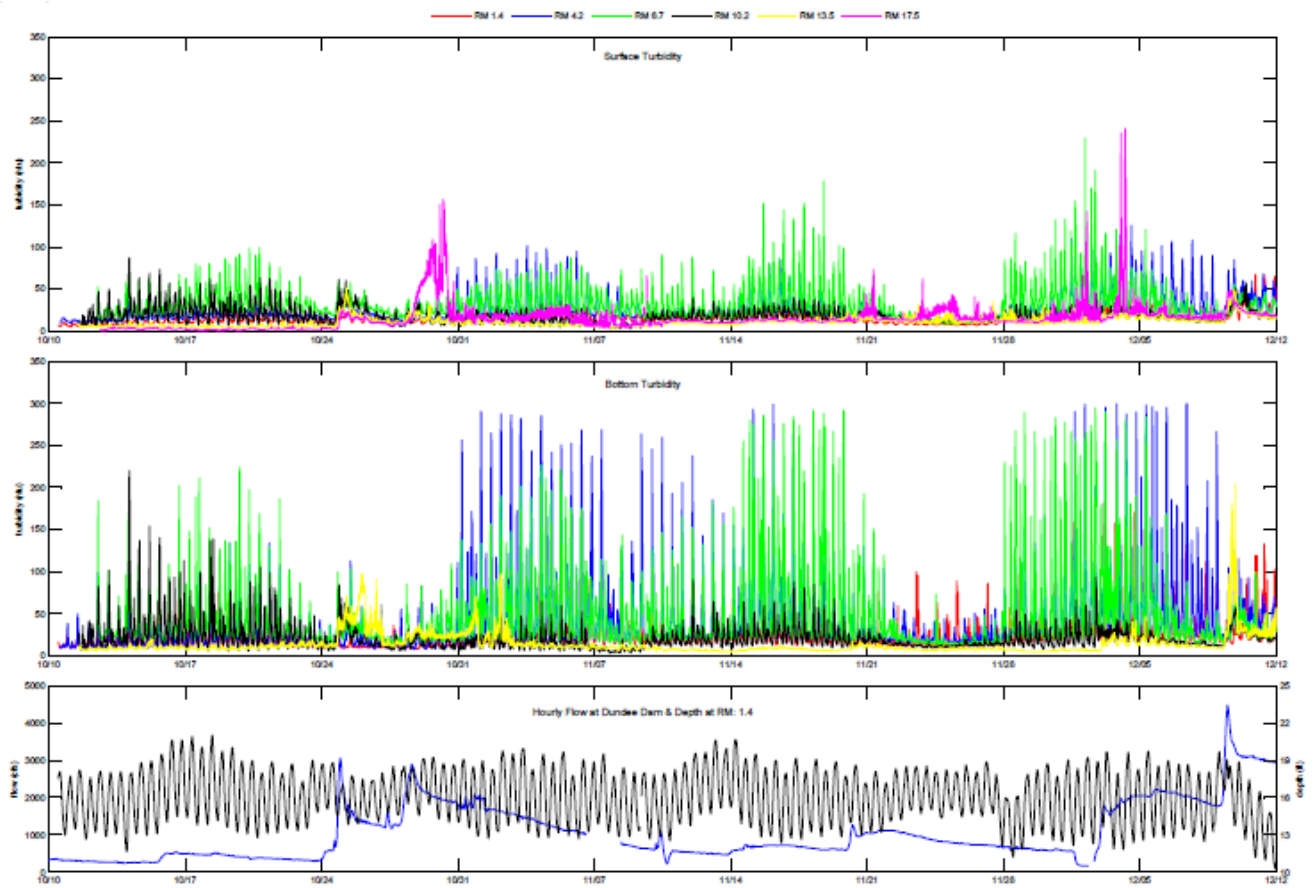
Preliminary Metrics, Triggers, and Responses

Remedy Objective/ Performance Standard	Primary Monitoring Metrics	Potential Triggers	Possible Response Actions
Reduce tissue concentrations in fish and crab	• Baseline and long-term tissue monitoring	• Tissue recovery rates are slower than the projected range • Tissue concentrations reach a plateau that will not achieve adequate risk reduction	• Confirmatory tissue sampling • Diagnostic sediment and water column monitoring • Source investigation • CFT/FWM model recalibration • Evaluation/selection of additional source control or in-water actions
Reduce COC concentrations on water column solids depositing in the upper 9 miles	• Baseline and long-term water column monitoring	• Water column solids COC concentration recoveries are less than the projected range	• Focused water column monitoring to identify areas of concern • HST/CFT model recalibration • Evaluation/selection of additional source control or in-water actions
Prevent re-exposure of subsurface sediment with COC concentrations >> RALs in uncapped areas	• Baseline and post-construction bathymetry • Future bathymetric surveys in response to high-flow events	• Bathymetry data indicate erosion and re-exposure of buried contamination	• Sediment sampling in potentially eroded/exposed areas • Evaluation/selection of additional actions

Baseline Monitoring - Overall Objectives

Following Agreement with EPA on the Upper 9-Mile Plan, the CPG would work with EPA to:

- Characterize pre-remedy conditions for comparison with post-remedy conditions
- Characterize variability
- Identify and characterize temporal trends



Potential Monitoring in the Upper 9 Miles

Component	Baseline	Remedy Implementation	Year 0 Post-Construction	Long-term	
				Primary*	Diagnostic
Bathymetry	√		√	√	
Water Column	√	√	√	√	√
Biota	√	√	√	√	√
Sediment (Recovery Indicator Areas)	√**		√		√

*Primary components are those identified as triggering metrics
**Sediment sampling will be performed in PDI

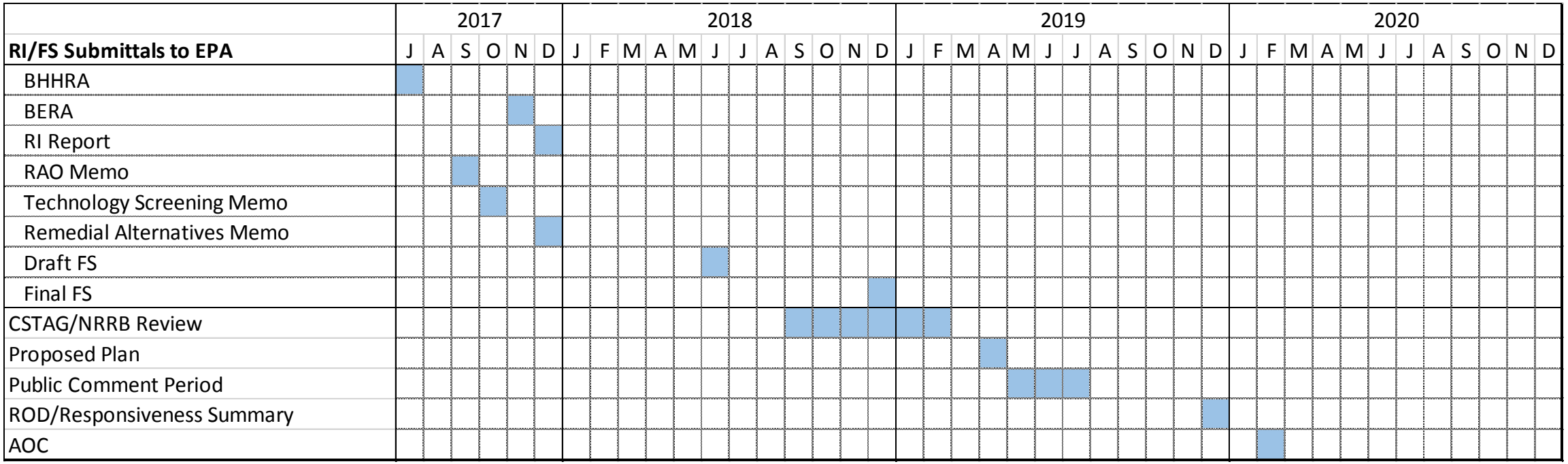
Baseline Monitoring

Component	Objectives
Bathymetry/ Side Scan Sonar	• Update bathymetry (including relevant shallow areas) • Update and refine grain size distribution map
Water Column	• Characterize solids and COC fluxes into and out of the upper 9 mile reach • Characterize water column COC concentrations within the reach
Biota	• Characterize chemical concentrations in fish and crab • Understand potential for biota recovery • Initiate trend analysis in biota over time

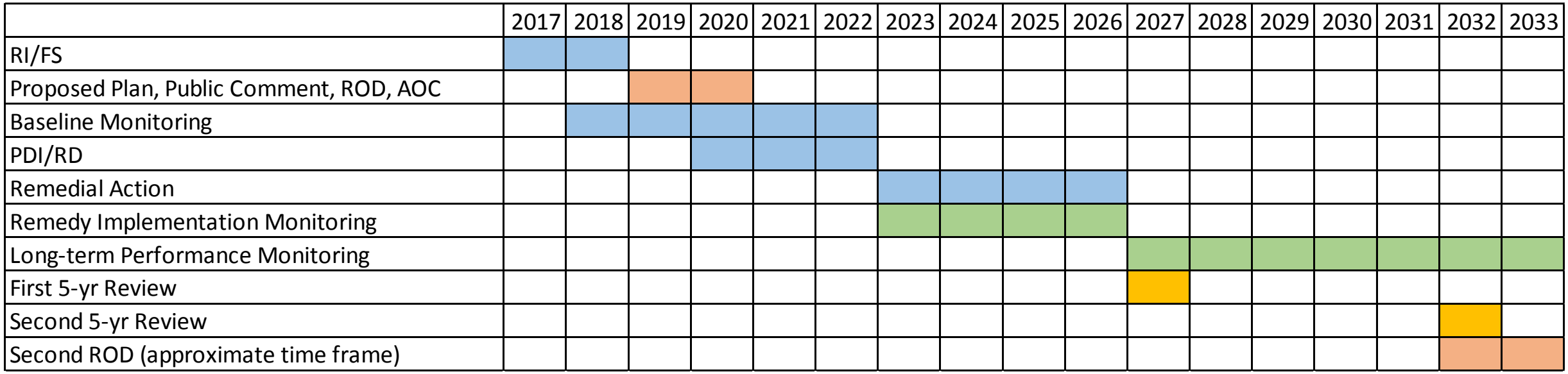
Long-Term Performance Monitoring

Component	Objective
Bathymetry	Confirm sediment stability
Water Column	Monitor solids concentration recovery and flux reduction
Biota	Monitor recovery trends
Sediments (RIAs)	Support diagnostic assessment if slow tissue recovery is observed; Characterize post-remedy surficial sediment concentrations to support sediment stability assessment

Upper 9-mile Plan – RI/FS Schedule



Upper 9-mile Plan – 5-year Review/ROD Schedule



First 5-yr Review:

- Confirm RAOs 2, 3, and 4 are achieved
- Characterize initial tissue recovery
- Verify sediment stability
- Identify any major deviations from initial remedy performance expectations

Second 5-yr Review:

- Confirm tissue recovery
- Confirm water column solids recovery
- Confirm sediment stability

Upper 9-Mile RAOs

- **Human Health - Fish and Crab Consumption**: Reduce cancer risks and noncancer health hazards for people eating fish and crab by reducing the concentrations of COCs in the sediments and surface water of the Lower Passaic River.
- **Human Health - Direct Contact**: Reduce cancer risks and noncancer health hazards to people who come into direct contact with sediment by reducing concentrations of COCs in the sediments of the Lower Passaic River.
- **Ecological**: Reduce the risks to ecological receptors by reducing the concentrations of COCs in the sediments and surface water of the Lower Passaic River.
- **Contaminant Migration**: Reduce the migration of COC-contaminated sediments from the Upper 9-miles of the Lower Passaic River to the Lower 8-miles, Newark Bay and the New York-New Jersey Harbor Estuary.

Action Items & Next Steps

- Are EPA & CPG aligned on the Upper 9-Mile Plan?
- Is the remedial action based on 300 ppt/1 ppm RAL acceptable?
- What is needed to develop a baseline monitoring program?

Additional Material

FS Technical Memoranda Schedule

- Overarching upper 9-mile FS schedule assumptions:
  - EPA/CPG agree on the plan presented in the 7/14/17 summary
  - EPA/PA comments on the memos will be incorporated into the FS, rather than a second round of memo revisions
  - EPA & CPG agree **today** on RAOs; CPG prepares revised RAO Memo in October

Memo	Task	Date
RAO Memo	Confirm postponement of PRGs (scope revision)	October 4 (today)
	Revised memo to EPA	October 30

*Or two weeks following EPA approval of scope

FS Technical Memoranda Schedule

Memo	Task	Date
Screening Memo	Call w/EPA to: • Confirm revised scope to focus on technology screening for the upper 9 miles • Confirm revised scope to exclude alternatives screening • Resolve any outstanding comments on Rev. 0	November 6 (week of)
	Revised memo to EPA	December 8*
Alternatives Memo	Meeting w/EPA to: • Discuss set of alternatives • Confirm revised scope to include technical basis for alternatives, but exclude alternatives evaluation • Resolve any additional comments on Rev. 0	December 4 (week of)
	Follow-up call or meeting w/EPA to: • Confirm set of alternatives	December 18 (week of)
	Revised memo to EPA	January 22**

*Or four weeks following EPA approval of scope
**Or five weeks following EPA approval of scope